Claims

1. Steering angle sensor (2) comprising a main rotor (4) which can be coupled for synchronous rotation with a steering column (14) or steering wheel and can be rotated about the axis of rotation (12) of the steering column (14), comprising at least one additional rotor (6) which can be driven by the main rotor (4), a first scanning unit for scanning the rotational angular position of the main rotor (4), and a second scanning unit for scanning the rotational angular position of the additional rotor (6), characterized in that the additional rotor (6) can be rotated about the axis of rotation (12) of the steering column (14) and at least one gear member (8), driven by the main rotor (4), is provided for driving the additional rotor (6).

2. Steering angle sensor (2) according to claim 1, characterized in that an evaluation unit is provided for evaluating the rotational angular position of the main rotor (4) and the rotational angular position of the additional rotor (6).

3. Steering angle sensor (2) according to claim 1 or 2, characterized in that the axis of rotation (10) of the main rotor (4) is coaxial relative to the axis of rotation (12) of the steering column (14).

4. Steering angle sensor (2) according to claim 1 or 2, characterized in that the axis of rotation (16) of the additional rotor (6) is coaxial relative to the axis of rotation (12) of the steering column (14).

5. Steering angle sensor (2) according to at least one of the claims 1 through 4, characterized in that the axis of rotation (10) of the main rotor (4) and the axis of rotation (16) of the additional rotor (6) are coaxial with respect to each other.

6. Steering angle sensor (2) according to at least one of the claims 1 through 4, characterized in that the axis of rotation (10) of the main rotor (4) and the axis of rotation (16) of the additional rotor (6) are mutually offset.

7. Steering angle sensor (2) according to at least one of the preceding claims, characterized in that the main rotor (6) and the additional rotor (4) are disposed substantially parallel to each other.

8. Steering angle sensor (2) according to at least one of the preceding claims, characterized in that the gear member (8) comprises a drive section (24) to be driven by the main rotor (4) and a driven section (26) for driving the additional rotor (6).

9. Steering angle sensor (2) according to at least one of the preceding claims, characterized in that the transmission ratio of the gear chain of the main rotor (4), gear member (8) and additional rotor (6) is not equal to 1.

10. Steering angle sensor (2) according to at least one of the preceding claims, characterized in that the transmission ratio of the gear chain of the main rotor (4), gear member (8), and additional rotor (6) has a numerical value which is a positive real number, but not a positive integer.

11. Steering angle sensor (2) according to at least one of the preceding claims, characterized in that the main rotor (4) and additional rotor (6) each comprise magnet sections (52, 58) extending over an angular region and comprising sectors (54, 56) of different polarities, both scanning units comprising magnetic field sensor configurations

(60, 66) whose output signals can be supplied to the evaluation unit to determine the absolute steering wheel angle.

12. Steering angle sensor (2) according to claim 11, characterized in that the sectors (54, 56) of a magnet section (52, 58) occupy the same angle.

13. Steering angle sensor (2) according to claim 11 or 12, characterized in that the main rotor (4) and/or the additional rotor (6) comprise at least two magnet sections (52, 58).

14. Steering angle sensor (2) according to at least one of the claims 11 through 13, characterized in that the main rotor (4) comprises at least 5, in particular 15 magnet sections (52) and the additional rotor comprises at least 4, in particular 12 magnet sections (58).

15. Steering angle sensor (2) according to at least one of the claims 11 through 14, characterized in that the magnet sections (52, 58) are uniformly distributed about a circle.

16. Steering angle sensor according to at least one of the claims 11 through 15, characterized in that a magnetic field sensor configuration (60), (66) comprises at least one analog magnetic field sensor (62, 64, 68, 70).

17. Steering angle sensor (2) according to at least one of the claims 11 through 16, characterized in that a magnetic field sensor configuration (60, 66) comprises two magnetic field sensors (62, 64 or 68, 70) which are mutually offset.

18. Steering angle sensor according to at least one of the claims 11 through 17, characterized in that the magnetic field sensors (62, 64 or 68, 70) are mutually offset by half the angular region occupied by one sector (54, 56).

19. Steering angle sensor (2) according to at least one of the claims 11 through 18, characterized in that the magnet sections (52, 58) are provided along the outer periphery of the main rotor (4) and/or the additional rotor (6) and the magnetic field sensor configurations (60, 66) are radially offset from the magnet sections (52, 58).

20. Steering angle sensor (2) according to at least one of the claims 11 through 19, characterized in that the magnet sections (52, 58) are provided about a circle disposed concentrically relative to the axis of rotation (10) of the main rotor (4) and/or the axis of rotation (16) of the additional rotor (6), the magnetic field sensor configurations (60, 66) being axially offset from the magnet sections (52, 58).

21. Method for determining the absolute steering wheel angle of a steering wheel, in particular by using a steering angle sensor (2) according to at least one of the preceding claims, characterized by the following steps:

    with a first scanning unit: detecting the rotational angular position of a main rotor (4) which is coupled for synchronous rotation with a steering column (14) or steering wheel and can be rotated about the axis of rotation (12) of the steering column (14)
    with a second scanning unit: detecting the rotational angular position of an additional rotor (6) which can be rotated about the axis of rotation (12) of the steering column (14), wherein

the additional rotor (6) is driven by a gear member (8) which is driven by the main rotor (4),
determining the absolute steering wheel angle by using the output signals of the two scanning units.

22. Method according to claim 21, characterized in that the absolute steering wheel angle is within an interval of 0° to 360°.

23. Method according to claim 21, characterized in that the absolute steering wheel angle is a multiple of the interval between 0° and 360°.